

## ABSTRACT

A proton-conducting membrane, excellent in resistance to heat, durability, dimensional stability and fuel barrier characteristics, and showing excellent proton conductivity at high temperature and a method for producing the same. A proton-conducting membrane includes a carbon-containing compound and inorganic acid, characterized by a phase-separated structure containing a carbon-containing phase containing at least 80% by volume of the carbon-containing compound and inorganic phase containing at least 80% by volume of the inorganic acid, the inorganic phase forming the continuous ion-conducting paths. The method for producing the above proton-conducting membrane includes steps of preparing a mixture of a carbon-containing compound (D) having one or more hydrolyzable silyl groups and inorganic acid (C), forming the above mixture into a film, and hydrolyzing/condensing the hydrolyzable silyl group contained in the mixture formed into the film, to form a three-dimensionally crosslinked silicon-oxygen structure (A). The above proton-conducting membrane is incorporated in a fuel cell.

[CHOSEN DRAWING]

Figure 1